

Remarks/Arguments

Reconsideration of this application is requested.

Request for Continued Examination (RCE)

Requests for continued examination (RCE) and a three month extension of time are enclosed in response to the final Office Action mailed on July 26, 2006. The extended period for response expires on January 26, 2007.

Claim Status

Claims 33, 41-43, 48 and 56-66 were presented. These claims are canceled, without prejudice, and replaced by new claims 67-72.

Claim Rejections – 35 USC 103(a)

Claims 33, 41-43, 48, 56-60 and 63-65 are rejected under 35 USC 102(b) as anticipated by Mountsier (US 5,810,933). Claim 61 is rejected under 35 USC 103(a) as obvious over Mountsier in view of Moslehi (US 5,936,829). Claims 62 and 66 are rejected as obvious over Mountsier in view of Moslehi and Sexton (US 6,377,437). In response, claims 33, 41-43, 48 and 56-66 are canceled and replaced with method claims 67-72 that clearly distinguish over Mountsier, Moslehi and Sexton.

As discussed in the previous amendment, the introduction of helium gas into a heat-exchange concave having a depth of 1 to less than 20 μm provides critical and unexpected advantages. In the "Response to Arguments", at page 4, the Action asserts that use of a certain gas is a functional limitation and, therefore, the limitation was given no patentable weight. In response, the claims are replaced with method claims that clearly and concretely require introduction of helium gas into a heat-exchange concave having a depth of 1 to less than 20 μm .

Mountsier's Fig. 9 is cited as disclosing a heat-exchange concave having a depth of 1 to less than 20 μm , however, the data shown in Mountsier's Fig. 9 is for *hydrogen* gas (column 7, lines 31-32), and not for helium gas as claimed. Thus, the data presented in Fig. 9 is not applicable to use of helium gas. As previously discussed, were Mountsier to use helium instead of hydrogen, the free-molecular path regime in Fig. 9 would be extended to a higher pressure region. Mountsier

discusses uniformity of temperature control only with reference to pressure variation (Fig. 14) and roughness of a wafer surface (Fig. 20). Depth limitation of the heat-exchange concave for uniform temperature control is not disclosed or suggested by Mountsier, and in particular is not disclosed or suggested specifically in conjunction with use of helium as a heat exchange gas.

Applicant acknowledges that Mountsier mentions helium, but not in conjunction with any disclosure or suggestion that it should be introduced into heat-exchange concaves in applicant's claimed range. Fig. 13 (curve F) shows heat transfer coefficient versus gas pressure using helium. However, the dot height H_D , which corresponds to the gap depth, is explicitly described as being equal to 20 μm (column 11, line 9). Fig. 14 shows temperature profiles of backside pressure drops between the center and edge of a wafer, when helium is used as the backside gas. However, the gap depth with respect to Fig. 14 is not specified. Thus, although Mountsier teaches use of helium, it does not teach introduction of the helium into concaves having a depth of 1 to less than 20 μm .

The inventors, by contrast, have found that the preferable depth range of the heat-exchange concave, *specifically tailored to helium*, is 1 to less than 20 μm . This combination of depth of the heat-exchange concave and use of a particular gas is not disclosed or suggested by any of the references of record. In this regard, a Declaration of the Inventors under 37 CFR 1.132 is enclosed further establishing that introduction of helium gas into a heat-exchange concave having a depth of 1 to less than 20 μm advantages that are critical and unexpected over the prior art. Thus, the rejections under 35 USC 102(b) and 103(a) should be withdrawn.

Conclusion

This application is now in condition for allowance. The Examiner is urged to telephone the undersigned to resolve any issues that remain after entry and consideration of this amendment.

Appl. No. 09/879,934
Amdt. dated January 25, 2007
Reply to Office Action of July 26, 2006

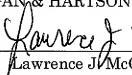
Atty. Ref. 83393.0008
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Any fees due may be charged to our Deposit Account No. 50-1314.

Respectfully submitted,
HOGAN & HARTSON L.L.P.

Date: January 25, 2007

By: _____


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